Report of the Committee on the Environment

Statement of the Committee's mission

The goal of the Committee on the Environment is to provide to President McCardell and the Middlebury College community recommendations in four areas:

1. The Program in Environmental Studies. What are the strengths and weaknesses of the Program in Environmental Studies as a major at Middlebury College? What changes should be made to the Program in order to improve its quality?

2. Environmental education across the curriculum. How can our program provide students with a basic understanding of the relationship between humans and the environment, including a knowledge of current environmental problems and approaches to addressing them? What are the critical points of interrelation between environmental studies and the other major areas of liberal arts education at Middlebury?

3. Safety and environmental impact. What steps can Middlebury College take (1) to ensure a safe and healthy environment for all who live and work on the college campus, (2) to restore natural ecological processes and protect the natural environment under its care, and (3) to minimize impacts on the larger environment, becoming a model of environmental awareness and responsibility.

4. Environmental awareness. In what ways could the College increase the awareness among members of the College community of the importance of conservation and sustainable patterns of living? In what ways could the College serve as a local and regional resource to increase environmental awareness outside of the institution?

Our 42 recommendations are organized into three sections, each corresponding to components of the mission statement. Within each section, we present an analysis of the current situation, a series of recommendations designed to address perceived weaknesses, and a discussion of how these recommendations relate to other institutional goals. We include a fourth section that describes topics we believe should be further explored.

Executive Summary

The Committee on the Environment was comprised of Alison Byerly, Holly Cookis, Eric Davis, Ned Farquhar (alumni representative), Greg Hanscom (student representative), Chris Klyza, Jim Larrabee, Grant Meyer, Raoul Miller, Bob Pack, Steven Rockefeller, Bill Peterson, Sallie Sheldon, Steve Trombulak, and John Woodbury. The committee subdivided into three independent subcommittees to address different aspects of our mission: awareness and outreach, curriculum, and impact. The final report reflects the work of all three subcommittees.

Specific recommendations that emerged from our discussions fall into three separate categories: those that should be authorized or promoted by the President, those that should be implemented by the appropriate faculty committee, and those that should be explored further. Within each category they are listed in rough order of priority.

Specific recommendations that should be authorized or promoted by the President

- A regular procedure for the evaluation of the environmental curriculum, including internal and external reviews, and the development of an environmental retreat.
- Implement incentives for existing faculty to develop new courses or components of existing courses that will support the environmental curriculum.
- Approve the hiring of an Associate Director in Environmental Studies.
- Establish the Environmental Council as a standing College council.
- Adopt the recommendations in the Environmental Council's 5 May 1995 report to the President.
- Develop a campus plan that relates to siting and architecture of buildings. Adopt a set of policies that relate to energy and materials efficiency in all future constructions.
- Continue to fund the operation of student organizations that work to promote environmental awareness.
- Approve a line item for Environmental Studies in the budget for journal subscriptions.
- Reinstate off-campus Winter Term courses.
- Create a lecture fund in environmental affairs, perhaps through the development of an endowment.
- Develop mechanisms to ensure that the latest environmental technology is incorporated into the operations of the College.
- Require that an introduction to environmental facilities, initiatives, and policies be part of new student orientation.
- Move the offices of the Program in Environmental Studies so that they are more centrally located to other offices on the campus, including the new natural science facility.
- Appoint faculty to serve on the Environmental Studies Steering Committee.
- Maintain a commitment to have the Directorship of the ES Program rotate among the humanities, social sciences, and natural sciences, and to have no one person direct the program more than three consecutive years.
- Direct CC&P to expand initiatives with regard to environmental careers and internships.

Specific recommendations that should be acted on by the appropriate faculty committee in a manner that leads to their implementation

- Ensure that there is no net loss in the number of faculty teaching in the environmental curriculum.
- Create new faculty positions to support the maintenance and development of the environmental curriculum, including positions in the fields of environmental ethics, environmental history, anthropology, sociology, international policy, art, geology, and environmental law. The Environmental Studies Program should play a role in developing the descriptions of the positions and conducting the searches.
- Implement procedures that ensure that the Environmental Studies Program is involved in decisions regarding faculty positions that currently support the environmental curriculum, including leaves, review for reappointment, and retirement.
- Maintain the number of courses required for the Environmental Studies major at no less than 14, plus senior work.
- Approve a mechanism whereby students can receive credit for summer internships.
- Maintain or expand the role of the adjunct position for an environmental practitioner.
- Approve a visiting environmental scholar program, modeled after the Twilight Scholars Program.

Areas that require further discussion before making formal recommendations

- The establishment of a summer program in environmental studies.
- The establishment of an off-site, academic-year program that includes an environmental curriculum.
- The establishment of an overseas program that includes an environmental curriculum.
- The establishment of environmental outreach and educational programs for the community.
- The establishment of an environmental distribution requirement.
- Clarification of the relationship between the College and the Center for Northern Studies.

Working definitions and principles

The Committee adopted the following as the working definitions and overall principles that we believe should guide Middlebury College in its efforts to develop the concept of "the environment" as an emerging area of institutional strength. The recommendations we make in this report are based on these definitions and principles.

1. Environmental studies refers to the formal study of the relationship between humans and the environment. Environmental science is a subcomponent of environmental studies, and involves the knowledge and techniques of the natural science disciplines as they relate to environmental studies. Environmental impact refers to the consequences of specific anthropogenic actions on ecosystems. Environmental awareness refers to an understanding by individuals of the causes and consequences of environmental impacts as well as to a personal commitment to minimize environmental impacts.

2. The study of the relationship between humans and the environment is an appropriate and important part of a liberal arts curriculum.

3. Understanding the relationship between humans and the environment in the liberal arts tradition is both a multi-disciplinary and inter-disciplinary study. It is multi-disciplinary in that it requires attention to a wide variety of subjects traditionally divided into separate disciplines. These include fields in the natural sciences, social science, arts, and humanities. It is interdisciplinary in that it requires the integration of information from a wide variety of subjects in order to reveal holistic concepts and principles.

4. A designated major in environmental studies is an important aspect of the environmental curriculum at Middlebury College.

5. Access to classes that relate to environmental studies should be available to all students, and not be limited to those who major in Environmental Studies.

6. The major in Environmental Studies should be designed to allow and assist each student to achieve his or her chosen educational goals. These goals may include preparation for graduate or professional study, preparation for a career as an environmental professional, and preparation for citizenship.

7. One of the roles of Middlebury College is to help prepare its students for responsible citizenship. This preparation includes training students to consider the long-term as well the short-term consequences of personal actions and the actions of society. It also involves equipping students with the tools and skills needed to create the best possible future for the community of life as well as their own and future generations. This education should not be restricted to the classroom; it should be carried out through the way students live and reflected in the management and design of the campus.

8. Middlebury College has a civic responsibility to lead by example with regard to its own environmental impacts. Every department and office and every member of the Middlebury College community has an obligation to cooperate in helping the College achieve the objective of becoming an environmentally responsible campus. Environmental considerations should be included in planning and decision-making at all levels throughout the institution.

9. The College should play an active role in providing opportunities for environmental education to the broader community to which it belongs. Although the strengths of the College in international studies and foreign language education makes this community a global one, we believe our priorities for educational outreach should focus on town and county in New England and eastern New York, particularly in the Lake Champlain Basin.

Part 1: The study of the environment at Middlebury College

In a speech to the Middlebury College community on 19 September 1994, President John McCardell identified the study of the environment as an area of emerging strength and importance for the College. Our committee felt that the goal of offering the best possible opportunities for Middlebury students to engage in the study of the environment would come both through the presence of a formal major and through a campus-wide effort to integrate environmental topics into the curriculum.

In discussing what would be required to develop the study of the environment as a spire of excellence at Middlebury College, we strongly felt that it will not be possible to achieve this goal unless there is a long-term commitment on the part of the Administration toward this end. Unless the College is prepared to devote considerable resources to faculty and staff in order to enhance the curriculum, efforts to change the profile of the study of the environment at Middlebury College will fail. As one member of the committee said, "We should either commit up front to doing it right, or we should not raise false expectations within the College community."

This section of our report identifies recommendations in eight areas that improve the formal major in Environmental Studies and improve environmental education across the curriculum. These recommendations should not be misinterpreted as suggesting that we believe other areas of the curriculum should be ignored. We hope that the methods we recommend be considered for the improvement of all aspects of the College's curriculum. However, because of the specific nature of our committee's mission, we present these recommendations specifically with regard to improving the study of the environment.

Evaluation of the quality of environmental education at Middlebury College

The Committee felt that specific criteria related to the quality of environmental education should be identified. These are: number of courses offered at the institution that have a significant environmental component, the range of disciplines represented among the courses that have a significant environmental component, the number of students at Middlebury College who take at least one course with a significant environmental component, the number of courses with a significant environmental component taken by the average Middlebury College student, the number of ES majors who choose to apply to graduate/professional schools who are accepted, the number of ES majors who choose to enter environmental careers who find employment, the number of ES majors who choose to do independent work

as part of their education and the quality of that work, the size and frequency of the classes that have a significant environmental component, and the academic skills of the students who choose to enter Middlebury College and major in ES.

We make three specific recommendations with regard to evaluation.

Recommendation 1: The President should authorize a regular review of the environmental curriculum at Middlebury College by an outside evaluation committee. These reviews should be scheduled at least once every 10 years and perhaps be timed to coincide with preparations for other campus-wide evaluations, such as re-accreditation reviews and capital campaigns. The first external review should be scheduled for Fall 1996.

Recommendation 2: The Steering Committee of the Program in Environmental Studies should conduct an internal review of the Program at least once every five years. The review should include survey of alumni with regard to employment and opinions about the education they received at Middlebury, evaluation of trends over time in the indices described above, and comparisons of Middlebury with other liberal arts colleges with respect to these indices. The President and the members of the Steering Committee should discuss the results of the internal review to identify priorities for improvement. The first internal review should be conducted during 1995-1996.

Recommendation 3: The President should sponsor an annual or semi-annual retreat for faculty interested in environmental education. This retreat might be modeled after the College's annual writing retreat, which has been successful at (a) fostering communication among faculty who teach writing, and (b) improving the quality of this aspect of the College's curriculum. Topics might include the role of case studies in the classroom, how to teach interdisciplinary topics in a disciplinary course, and whether it is advisable to avoid having students read the same standard texts (such as Leopold's A Sand County Almanac) in more than one course. The Provost should, in consultation with the Steering Committee of the ES Program, select a coordinator for the retreat.

Curriculum for the major in Environmental Studies

Established in 1965, the Environmental Studies Program at Middlebury is the oldest in the country. The Program has been substantially changed and revitalized since the mid-1980s. The major was made more interdisciplinary and was designed based on introductory core courses, cognate courses for breadth, a foci for depth, and a senior capstone seminar. The number of students graduating with an ES major has increased dramatically since 1988, with a projected 60 students graduating in 1995. Environmental Studies is now the fourth largest major on campus. The ES major is designed to teach students that the study of the environment, human relation to the environment, and environmental problems are necessarily understood only through an interdisciplinary approach. Although we require coursework from all students in the humanities and social sciences, we recognize the central importance of the natural sciences for any ES major by requiring each student to have a minimum of three (soon four) laboratory science courses. The ES major is an ideal one for a liberal arts college

since it provides an organizational thread to connect the often diverse courses students take during their academic careers.

Recommendation 4: The major in Environmental Studies should not be limited to fewer than 14 courses plus senior work. It is the Committee's belief that the current quality of the ES program, as measured by the breadth of topics in any ES major's course of study and the rigor represented by any given focus, would be seriously compromised by enforcement of a reduction in the number of courses required by programs for completion of a major. Specifically, the minimum number of courses needed by an ES major should be no fewer than 14, not including ES 401 or other independent work. Even in the event of a college calendar without a winter term and only a 32-course graduation requirement, the ES major requirements should not be reduced.

While some may argue that a major that requires a large number of courses is not in the spirit of a liberal arts education, this cannot be said of the current ES major, which is the most interdisciplinary major on campus. The ES major requires a 3-course introductory sequence in science, literature, and policy, a 6 or 7-course focus (depth courses) in biology, chemistry, economics, geography, geology, policy, literature, or human ecology, 4 cognate courses which ensure additional breadth at a more advanced level, and a senior capstone course.

Recommendation 5: Allocate faculty resources so that the introductory-level course in the social sciences (PS 211: Natural Resource and Environmental Policy) can be offered in both the Fall and Spring Semesters. Currently, PS 211 is the only core course offered once a year. This is problematic in three ways. First, the course has become a bottleneck for the major since the other two core courses (ES 112 and EL/AL 113) are offered twice a year. Second, the high demand means that non-ES majors who are juniors or seniors cannot take the class. This hurts broader environmental education goals. Third, since the course is only offered in the fall, it makes it difficult for some students to fit it into their schedule and travel abroad plans. PS 211 should be offered twice a year. This could be done by changing the course to be more of a social science course (rather than political science course) that could be taught one semester by an economist, geographer, or sociologist.

Recommendation 6: There should be no net loss in the number of faculty teaching courses that support the major in Environmental Studies. Some mechanism must be implemented to insure that when a faculty member who has provided courses that support the major leaves the institution, the courses he or she teaches should be replaced in the curriculum. When a department makes a request for a faculty replacement, the Teaching Resources Committee needs to assess not only the role that the departing person plays in that department but the role he or she played within the ES Program. Currently there is no mechanism for the Program to be informed of retirements, negative review decisions, or requests from departments to TRC for replacements. As a result, the ES Program currently hears only about these decisions on a random basis. The administrative representatives to the TRC should, as a matter of course, seek the advice necessary to assess the role that the departing person played in the Program and guarantee that this component not be lost.

Recommendation 7: Encourage the faculty already at Middlebury College to increase the representation of environmental perspectives into their curricula, either as part of existing

courses or the introduction of new courses. If we want to improve the opportunities for the study of the environment at Middlebury College, we must create incentives and allocate the resources necessary to encourage faculty to achieve this goal while simultaneously removing the disincentives to such curricular reform.

1. Establish a component of the Faculty Professional Development Fund that is specific to course development and does not count against a faculty member's receipt of research or travel funds. Currently, a faculty member at Middlebury who applies to the FPDF for course development funds is at a disadvantage if he or she later applies for research or travel funds.

2. Establish a competitive course-development grant program. This would be similar to the program at Tufts University. With an endowed fund, the University makes available a limited number of curricular development grants each year specifically in the field of environmental education. These grants are externally reviewed but only faculty at Tufts University are eligible. This program encourages the improvement of the environmental curriculum by funding high-quality projects without penalizing the professional development of the faculty. Eligibility for these development grants should include the development of new modules within courses, the development of entire courses, summer salary for development, and supplements to departmental budgets to support new curricula.

3. Grant Winter Term release time, independent of the regular release time program, to faculty who are interested in meeting regularly to exchange ideas and information about how appropriately to work environmental issues into courses they already teach. This is a natural area for more faculty contact and cooperation.

Recommendation 8: Increase the number of new faculty at Middlebury College who teach courses that support the mission of environmental education. The College has made tremendous strides in this area over the last five years. Since 1990 more than 10 new faculty contribute courses to the environmental curriculum. This trend should be encouraged to continue. Further, the approach that the College takes toward this goal should be refined in the following ways:

1. Currently, although departments are encouraged to consider the how their request could support the Program, rarely is the Program itself invited to contribute. Although this is not always the case, often the Program learns of a new position that could support the development of the environmental curriculum after it is too late to influence the process. Therefore, whenever the TRC is considering a new or replacement faculty position, the potential for this position to support the environmental curriculum should be assessed. At least one person on the TRC should be explicitly charged by the Provost with the responsibility of representing the ES Program. Normally this would be the member of the TRC who is most familiar with the Program. When the representative feels it is warranted, the ES Steering Committee, via the Director, should be invited to comment on how the proposed position could serve the environmental curriculum.

2. New faculty positions that are designed to, in part, support the ES Program should bring with them formal titular and contractual stipulation. Particularly advisable are positions

shared 50:50 between ES and a home department, following the examples of John Elder (English/ES) and Steve Trombulak (Biology/ES). It was an important advance to have the responsibilities for courses that support the environmental curriculum stipulated in the contracts of faculty, such as Sallie Sheldon (ecology), Chris Klyza (environmental and natural resource policy), Grant Meyer (environmental geology), and Tom Carr (environmental economics). However, there is more to an environmental curriculum than simply offering courses; also important are academic advising, thesis supervision, and administrative committees. By not stipulating the relationship of these faculty to the Program itself, they are vulnerable during review to faculty in their department who are not sympathetic towards the broader educational goals of the institution. Further, it leaves the role of ES Program in participating in reviews haphazard and at the whim of the Committee on Reappointment. Such appointments should be negotiated among the administration, the department, and the ES Program.

3. When approving faculty positions designed to support the environmental curriculum, the TRC should be cautious about proposals suggesting that general support for ES will be provided "by the department" rather than explicitly coming from the newly hired person. An issue to evaluate closely is whether the mechanism proposed by the department to provide the support will result in a better education for the students than if the support came from the new person who was hired with that course or discipline in mind. TRC should consult with the ES Steering Committee about such appointments before they are made.

4. Develop specific faculty development goals to address obvious gaps that currently exist in the environmental curriculum. Recent hirings in the natural sciences, specifically in biology, chemistry, and physical geography, have made a significant contribution to addressing those pressing needs. Attention must now be given to other aspects of the curriculum. The following are the areas that we believe ought to receive attention from the TRC along with our suggestions on how to best integrate these fields into the College. It is important to note that this list represents only faculty increments that we believe are required <u>now</u>. If the student body expands, as has been proposed, additional faculty will be required to offer additional course sections, especially of the core courses.

   Priority increments include:

   Environmental ethics/philosophy: Regular tenure-track line with 50% appointment with the ES Program and a 50% appointment in Religion or Philosophy. The complete teaching load would depend on the department that the person was affiliated with but could include environmental ethics, environmental justice, ecofeminism, and biocentric philosophies.

   Environmental history: Regular tenure-track line with 50% appointment with the ES Program and a 50% appointment in History. Relevant classes that would support the environmental curriculum include an introduction to environmental history, history of the western U.S., environmental history of other parts of the world, and the history of science.

Sociology/Anthropology: With the retirement of David Andrews, responsibility for the Human Ecology focus has fallen solely on Burke Rochford, whose participation in the ES Program has decreased in recent years. In order to continue supporting this curriculum, an appointment shared 50:50 between the ES Program and Sociology/Anthropology is required. Coursework that would support the environmental curriculum would include Native American cultures, indigenous cultures, and grassroots collective action.

International policy: Currently the curriculum in environmental policy is provided by only one faculty member (Chris Klyza), resulting in large class sizes, infrequent course offerings, and an unusually high advising load for Klyza with regard to independent senior research. Further, Klyza's expertise in U.S. policy limits the development of curricular connections between international studies and environmental studies. The Committee recommends that a position be created in the field of international environmental policy, shared between the ES Program and an appropriate department, such as Geography or Political Science.

Environmental law: The College should work to make this course a part of the regular curriculum through the development of an exchange of some kind with the Vermont Law School or another law school.

Art: Representation of this field would strengthen the contribution of the humanities to the environmental curriculum. Ideally, such representation would come from an increment to the Art Department shared with the ES Program. Alternatively, this goal could be achieved by encouraging curricular development by the existing faculty in the Department of Art. Courses that could be added to the curriculum include environmental art, environmental architecture, art and nature, and landscape painting.

The study of literature: Since one of the immemorial themes of literature in the English language is the physical world and our interpretation of natural phenomena, from Shakespeare to Wordsworth, to Thoreau, to Frost, and the great ongoing debate between "nature" versus "nurture," it is necessary that faculty from the American and English Literature Departments will continue to offer courses that will be part of the humanities aspect of the Environmental Studies Program. In recent years, "Visions of Nature" has been taught by Alison Byerly, Don Mitchell, and John Elder, and "The History of Nature" has been taught by Bob Pack. It is to be expected that these Departments will continue to contribute to the ES Program, and TRC should take this contribution into account in evaluating the needs of these Departments to cover the courses essential to their major, especially with regard to requests for increments. It should be added, that it would be desirable for these courses, grounded in the study of literary texts, offer more interdisciplinary connections between literature and science, say, between Big Bang theory and mythic accounts of the creation. It would be particularly fruitful, for example, to have such courses taught jointly by a member of the English Department with a member of the Physics or Biology Department. Such collaborative efforts would help distinguish Middlebury from other academic institutions.

Geology: The Geology Department recently submitted a request for a tenure-track position in physical limnology (lake studies) with environmental applications to replace Lucy Harding. This position will be an important contribution to the ES Program and should be supported. In addition to teaching GL 161 (Oceanography) and maintaining research in environmental issues on Lake Champlain, Geology would expect the new hire to develop a new course on environmental lake studies. This person will provide internal leave replacement for Grant Meyer, so that Geology could offer a section of ES 401 (Environmental Policy Formation) each year, and would also teach the important Environmental Studies cognates GL 112 and GL 255 occasionally, which would enable Meyer to develop new courses for Environmental Studies.

Environmental/landscape planning: This field should be made available whenever possible as part of the Winter Term curriculum, and taught by a practitioner of the field. If interest in this course continues to grow, we should consider offering this course during the regular semester.

5. A member of the ES Program should be appointed to committees that are conducting searches to fill faculty positions that will support the environmental curriculum.

Recommendation 9: The Committee on Reappointment should solicit letters of recommendation from senior faculty in the ES Program when a candidate who has played an active role in the Program is being reviewed. It is only proper that, given the level of effort participation in the Program requires, it be a regular part of a faculty member's review and need not be specially requested by the candidate.

Recommendation 10: When a participating member of the ES Program is granted a leave, the TRC should consult with the Program, via the Director, about the impact the leave would have on the environmental curriculum. While departments may consider some leaves to be "replaceable from within" from the perspective of only the departmental curriculum, those faculty may need to be replaced because of their importance to the ES Program. This is particularly true of faculty who teach required course (ES 112, EL/AL 113, PS 211, and ES 401).

Recommendation 11: The College should maintain its commitment to providing an ongoing adjunct position to teach a section of ES 401 (Environmental Policy Formation) filled by an environmental practitioner. Many environmental disciplines are better represented by practitioners, rather than by academics. Such fields include environmental planning and consulting. Because many of our students choose to enter such fields, it is advantageous to expose them to such practitioners while at Middlebury. Further, such practitioners contribute to the on-going evaluation and improvement of the curriculum by providing their professional perspectives. Recently, the ES Program has benefited greatly by having one of the sections of ES 401 taught by Jim Northup, a local environmental consultant and former planner for the Green Mountain National Forest. Students have spoken highly of both Mr. Northup and of the value of interacting with an environmental professional in a classroom setting. We recommend that such a position be continued, and perhaps expanded to include an additional course.

Recommendation 12: The College should increase the opportunities for mid- to upper-level research and creative experiences for students. Several opportunities for expansion of the curriculum in this area exist.

1. Develop a set of three junior-level research courses, one in each of natural science, social science, and the humanities. Details of such courses remain to be worked out, but the general characteristics might include: interdisciplinary investigation of a topic, team teaching, and independent or group research. Such a course in the natural sciences, for example, might involve a team of three faculty, one each from biology, chemistry, and geology, directing a group of students in an interdisciplinary research project designed to answer a question related to environmental science. Examples of relevant topics include the effects of the Middlebury sewage treatment plant on water quality in Otter Creek, the effects of forest management practices on biological integrity in the Green Mountains, and the impact of agriculture on sediments and organisms in Lake Champlain. The only barrier to offering such a course now is that faculty resources are sufficient only to staff existing courses.

2. Bring back opportunities for off-campus field courses during the Winter Term. These opportunities disappeared a number of years ago, apparently for financial reasons. However, we strongly believe that a significant educational advantage was lost as well, not only in Environmental Studies but across the curriculum. Winter Term offers an excellent opportunity for research-based field courses in the environmental sciences, which can be conducted inexpensively (e.g., with a small group of advanced students traveling to field site(s) in the southern U.S.). These courses should be restored.

Administration of the Program in Environmental Studies

Recommendation 13: Create the position of Associate Director for Environmental Studies. An Associate Director (someone with at least a Master's Degree in some aspect of environmental studies) would greatly enhance communication, cohesion, and educational opportunities within the Program. This person should be authorized to work part-time in development to find the financial support for various environmental initiatives. An Associate Director could also help advise our students and teach an occasional course, as well as be responsible for several other initiatives recommended in this report. There are precedents in the language and science divisions for such a person who supports a broad inter-disciplinary area of the curriculum. This person would also make it possible to expand our internship program.

Recommendation 14: Create a line item for environmental journals in the journal budget of the library. Currently, the ES Program cannot add a new journal to the College's holdings unless it can convince a department to request it as part of its journal allocation. Given the increase in the number of new journals devoted to an academic treatment of environmental subjects and the pressure departments already feel with regard to their journals, such a situation is not ideal. We recommend $5000 per year be allocated to the ES Program.

Recommendation 15: Create a lecture fund to support the annual Environmental Affairs lecture. Although we have been fortunate to bring an excellent and varied group of speakers to campus over the last few years, it is a time-consuming and difficult procedure to cobble together the funds for these speakers from various groups on campus. Although the trend is now to allocate lecture funds by division, the ES Program, bridging several divisions, falls outside this framework. A lecture fund for Environmental Studies would eliminate this problem for our major lecture each year. One mechanism that would be particularly useful would be to promote, with the help of the development office, the creation of an endowment for an Environmental Affairs lecture series.

Recommendation 16: The location of a permanent home for the Program in Environmental Studies should be considered in light of the construction of a new facility for the natural sciences. The allocation of Farrell House as the home for the Program was an important positive step in helping the Program centralize its facilities, provide an environmental resource center for the students, and by its location in a separate house indicate that it is not embedded within any one division. The only disadvantage is its location on the periphery of the campus, especially its extreme separation from the lower end of campus. Once the location of the new science facility is determined, an appropriate house near to that facility and the other offices on campus should be designated as the offices for the Program. Enacting this recommendation may only require swapping the roles of that house and Farrell House, so that no office or housing space is lost.

Recommendation 17: The members of the ES Steering Committee should be appointed by the President. The responsibilities of the Steering Committee are so important to the long-term welfare of the Program and so time consuming that the composition of the Committee should not be determined haphazardly. Appointment should be based on qualifications and commitment, just as any appointment within a department would be, and should be made by the President so that it becomes an official part of the faculty members file.

Recommendation 18: The Director of the ES Program should rotate through the humanities, natural sciences, and social sciences. The position should also rotate among individuals, with no one person being Director for more than three consecutive years. Since the ES Program is interdisciplinary by design, it is important to underscore this point to students and faculty by making sure that Program leadership come from these three main divisions. To do otherwise would undercut the legitimacy of the interdisciplinary approach. We also think that no individual should serve more than three consecutive years because the program may then take on too much of an individual's perspective. This has caused difficulties with ES Programs at other institutions.

Summer environmental programs

Recommendation 19: Establish a summer program of study of the environment based in Vermont. This program should be specifically designed to complement the regular semester curriculum and offer Middlebury College course credit. A summer program in environmental studies would provide several advantages to Middlebury College. It would provide field science experiences for our students, it would provide an opportunity for

collaborative teaching on interdisciplinary themes (i.e., water issues in the Champlain Basin, forestry in the northeast), and it would provide the base upon which to build a summer graduate program comparable to the Summer Language Program and the Bread Loaf School of English. This last advantage is particularly attractive because the College's summer graduate programs have done so much to advance Middlebury's international reputation in these fields. A comparable program in environmental studies could well do the same for this emerging spire of excellence.

Our Committee felt that development of such a program is advisable, although we did not have the opportunity to discuss it at sufficient length. Such a program has been discussed in some detail for the past two years by the Steering Committee of the ES Program, and it seems worthwhile to continue to investigate that opportunity. At this point it is clear that there is strong support among the ES faculty for such a program offered during the summer at some location at or near to the Middlebury campus (e.g., High Pond, Bread Loaf). Questions that we did not have time to fully address include the relationship between the summer program and the academic-year program at Middlebury College, how teaching in the summer program would relate to normal teaching responsibilities for Middlebury faculty, and the best location for such a program.

Academic-year programs

Recommendation 20: Explore the options for developing an environmental curriculum offered at a full-year Middlebury program somewhere else in the United States. The impetus for the development of such a program comes from three directions: (a) opportunities in the Southwest for expansion of the Bread Loaf in Santa Fe Program, (b) the educational advantages of field science courses in locations other than New England, and (c) the potential for developing a stronger environmental law curriculum by establishing a more permanent presence in Washington, D.C. This recommendation has perhaps the most serious long-term implications for the College, and should be evaluated in much greater detail.

We agreed that the curriculum of such a program should reflect the interdisciplinary nature of environmental studies as it is currently taught at Middlebury College and that it should have a prominent field component to it. We also felt that such a program should probably be developed in stages. The first stage would be to implement the summer program here at Middlebury College and its surrounding facilities, as described above. If it is clear that we have faculty and student interest sufficient to guarantee enrollments, we should consider expanding the program to another location based on its educational value. At first, this expansion could well involve collaboration with another college or university. Only after it is clear that such a program can be maintained with a high level of quality and enrollment over the long term should we invest in our own facility.

Questions that we did not have time to fully address include the relationship between a summer program in Vermont and an academic-year program at another location, how teaching in the program would relate to normal teaching responsibilities for Middlebury faculty, and the best location for such a program. Locations mentioned in the Committee

were the southwestern U.S. (see Appendices 1 and 2) and Washington, D.C., although other sites should also be explored for their potential to contribute to the environmental curriculum.

Recommendation 21: Clarify the relationship between Middlebury College and the Center for Northern Studies in Wolcott, Vermont. The history and status of the relationship between these two organizations are confusing. Because of the potential for the Center to offer meaningful field and environmental opportunities to Middlebury students, this relationship should be clarified, the quality of the current curriculum should be evaluated, and options for further interactions explored.

Connections with international studies

Recommendation 22: Establish an overseas program that includes an environmental curriculum. One of the strengths of Middlebury College is its emphasis on opportunities to study in another country. Many students come to Middlebury because of its reputation as a center for foreign-language education and its off-campus programs. This reputation also influences the goals even of students who are not majoring in a foreign language or international studies. Many environmental studies majors, for example, seek to spend all or part of their junior year studying environmental issues in a foreign country.

Up to now, most of these students take such courses through a program offered by another U.S.-based institution or organization. Recently, a small number of students have attended the Field Semester for Sustainable Development, offered in Costa Rica by a consortium of college's and universities, of which Middlebury College is a member. There has also been a recent increase in the number of environmentally-oriented students that study abroad by enrolling in foreign universities.

Several aspects of this current situation are not ideal, however. The primary concern is one of influence by Middlebury College on the quality of the coursework offered to our students. Even in the Costa Rica semester the academic rigor of the program is less than desirable. This concern raises the issue of whether Middlebury College ought to increase its involvement in offering study abroad opportunities in the area of environmental studies for our students. The Committee identified two areas that should be explored toward this end.

1. Increase the opportunities for the study of the environmental at the existing Middlebury College programs in Europe. Currently students who attend these programs are discouraged from taking environmentally-relevant courses at nearby or affiliated universities. This is unfortunate in that it represents a missed opportunity for international environmental education.

2. Develop a new off-campus program that includes opportunities for the study of the environment. Further discussion of this point is necessary with regard to the optimal location and curriculum. At this point, sentiment on the committee was strongest for a program in Latin America, particularly in an Andean country. A final recommendation would need to explicitly address the trade-offs among countries with regard to safety,

ecological diversity, uniqueness of political and economic traditions, and access to interesting geology.

Regardless of which options the College pursues, the Committee feels strongly that the hallmarks of any curricular expansion in this area be: (a) a level of academic excellence commensurate with the curriculum at the Middlebury, Vermont campus, (b) language proficiency for all students, and (c) a clear connection between a program's location and its curriculum.

Environmental intern and careers programs

Recommendation 23: The President should direct the Career Counseling and Placement Service to establish a priority for environmental intern and career opportunities for Middlebury College students. Students currently feel that the efforts of CC&P could be expanded in the area of opportunities in environmental careers. In light of the rapid expansion of career opportunities and interest among Middlebury students in environmental fields, a reassessment of CC&P priorities is in order.

Recommendation 24: Establish an environmental intern program for Winter Term and the summer, coordinated by the Associate Director for the Program in Environmental Studies. Some of the most valuable education environmental studies students receive while at Middlebury College comes from experience gained from an internship. Current opportunities are limited, however, because of (a) the lack of time available to the ES faculty to cultivate the internship opportunities, and (b) the lack of an internal mechanism for granting credit for a summer internship. Both of these barriers should be eliminated.

The study of the environment across the curriculum

Much of what we have proposed above will contribute to education across the curriculum, but we offer a few additional recommendations to further these goals.

Recommendation 25: Develop a short-term rotating position for a visiting environmental scholar to teach a class and hold a series of lectures during a semester. Just as with the Twilight Scholars Program, the presence of a visiting scholar would provide new and unique learning opportunities for the entire college community.

Recommendation 26: Implement an environmental distribution requirement. The Committee did not have adequate opportunity to discuss this issue. The logic of such a requirement is that it makes as much sense to require all students to take a course on some aspect of the relationship between humans and the environment as it does to require a course on some aspect of European cultures and civilization. This is especially true if we are indeed going to imagine the College to be an "environmental campus" where the study of the environment is an emerging area of strength. The disadvantages of such a requirement are (a) it would be yet one more requirement, and (b) only about two-thirds of the student body would have already

satisfied the requirement, which would put further pressure on enrollments in environmental courses. This recommendation needs to be further explored.

Recommendation 27: Develop an Environmental Studies minor. We currently have no minor in ES due to staffing constraints. Such a minor should be developed, but before it is offered we should make sure the faculty resources are in place to make sure ES majors and minors could get into the courses they need. A related idea is the potential of developing an introductory level ES course for non-majors. This could prove to be a valuable tool for the environmental education of students not majoring in ES, but it has significant staffing implications.

Implications of an expanded student body

Immediate benefits. Depending on how the increase is achieved, it could result in a larger group of students potentially interested in summer and off-campus programs.

Challenges. An increase in the student body would bring with it demands for in classroom space, student research space, library resources, and teaching supplies. It would also bring with it a demand for increased faculty. Introductory-level courses in environmental studies are already in great demand, even those that have recently been expanded to being taught each semester. Expanding the student body, which presumably would bring with it a proportional increase in the number of students interested in environmental courses and the ES major, would require additional faculty just to keep doing what we are doing now. Increments in the following fields would clearly become priorities: biology, physical geography, international policy (either political science or geography), literature, and sociology. Faculty in these areas would be required to offer additional sections of the three core courses (ES 112, EL/AL 113, and PS 211) and the senior capstone course (ES 401), as well as to provide proper advising for independent senior work, including theses.

Part 2: Institutional efforts to reduce its environmental impact

Middlebury College's commitment to reducing its environmental impact began in the early 1970's with energy management. The OPEC Fuel Embargo of 1973 caused the cost of fuel oil to rise from $4 to $34 a barrel. We hired an energy consulting firm to help determine which projects to undertake. The Administration committed monies to upgrading heating controls and equipment, installing storm windows, insulating attics, updating the Central Heating Plant equipment and underground steam distribution system, beginning cogeneration, installing heat sink/heat pump systems, converting incandescent lighting to fluorescent etc. In less than 10 years the College's total annual energy consumption decreased from 2.2 million therms at a cost of $207,800, to about 1.4 million therms at $732,800. By 1982 several million dollars in costs had been avoided as a result of these projects.

In 1977, the Energy Council was created to emphasize community involvement in the effort. The President appointed members from the faculty, staff and student body. Awareness-raising events such as "No Peak Week," blackout dinners and dances, energy reduction competitions, and symposia helped inform the community and encourage its participation. Though the Council disbanded during the mid-1980's, energy conservation projects were continued, including the installation of a second turbine generator in the Central Heating Plant, a new dual fuel boiler, dual glazed primary windows, and a micro-computer energy management control system in Painter Hall. Now, this Energy Management System is probably the single most important piece of energy reducing technology on campus--thus far, it has been expanded to control about half of our major buildings.

In 1989, an ES 401 class did a comprehensive study of the College's waste stream and wrote a report called "No Time to Waste." This was the initial step in establishing our current campus recycling program. A year after the Energy Council was reinstated in 1991, it became the current Environmental Council. Its focus expanded to include other environmental issues such as recycling and water conservation and even advocated for the Recycling Coordinator's position.

Middlebury College has a tradition of environmental conservation and has shown imaginative leadership over the years. We were the 1993 Vermont School Recycler of the Year and diverted over 57% of our 1994 waste stream to recycling or composting. Other colleges and universities seek advice and start-up information from us. We hope to continue this leadership in the future.

Priority recommendations

Recommendation 28: Establish the Environmental Council as a standing college council whose chair is appointed by the President. The value of this action is clear. The issues that surround the impact of the College on the local environment are so numerous and dynamic that a standing committee that reports to the President is vital. The mission of the Environmental Council should be:

1. To promote environmental awareness on campus among faculty, staff, and students.

2. To make recommendations to the President designed:

    a. to ensure a safe and healthy environment for all who live and work on the College campus.

    b. to maintain biodiversity and wildlife habitat, restore damaged ecosystems, prevent pollution, safely manage hazardous waste, and safeguard the beauty of the landscape in the outdoor environment directly under the care of the College.

c. to promote throughout the College community conservation of resources, energy efficiency, waste reduction and recycling, pollution prevention, increased reliance on renewable resources, and other measures consistent with sustainable living.

d. to further long-range environmental planning by the College.

e. to assist the College in carrying out its civic responsibilities in the area of the environment.

3. To ensure that the College undertakes a College-wide environmental audit on a regular periodic basis and that the audit is shared with appropriate College administrators.

4. To encourage faculty to provide students opportunities within the framework of academic courses to conduct research on campus and local environmental issues; and to ensure that such research is shared with the Environmental Council and appropriate officials within and outside the College so that it can be used to formulate improved policies and programs.

5. To design and coordinate programs to reduce the environmental impact of the College as directed by the President.

Recommendation 29: The President should adopt the recommendations that will be formally made by the Environmental Council in their 5 May 1995 report. During this past year, the Environmental Council has investigated numerous aspects of the environmental impacts of the College's operations. Their work spanned a wide range of topics, including business management, publications, energy and water conservation, food, land stewardship, toxic materials and other pollutants, waste, and transportation. The recommendations that emerge from the Environmental Council's report are central to developing a plan for how the College should move forward with reducing its impact on the local environment.

New buildings on campus

The college is in the enviable position of being able to take the "long view" on its construction projects. This means that energy efficiency and minimal impact can be designed into the buildings with longer payback times than commercial organizations might bear. Almost all energy-saving construction techniques pay for themselves in the medium to long-term, and the college has been an innovator in the field of resource conservation in large buildings.

Recommendation 30: A campus plan should be prepared to determine the best and most integrative directions for building. This should not only address æsthetic concerns but also siting of new buildings. Æsthetics of building and the campus are as important as energy savings and internal environment in new buildings. Justification for such a plan is well-described in the 9 March 1995 letter to the President from Dr. Frank Winkler and

Dr. Glen Andres (Appendix 3), endorsed by the Environmental Council. Essential elements of this plan include consideration of the architecture and landscape of the campus, as well as the impacts of development on biological conservation in the local environment. Such a plan must specifically address the issue of the consequences of where to site buildings. We recommend that the President adopt a long-term view of the question of a campus plan, rather than consider construction on a project-by-project basis. Such a view should emerge from an open community-wide dialog, including the residents of the Town of Middlebury, that explores the priorities for where to build, where not to build, and how to build.

Choosing not to build should be as viable an option as expansion and the all around impact of any new construction needs to be discussed by the college community as a whole. Inherent in the attractiveness of Middlebury College's campus are the open spaces and vistas, the unimproved and undeveloped woodlands and the diversity of vegetation. New building must harmonize with the existing design and spacing of buildings on the campus rather than following the obtrusive design of some of the 1960s and 70s buildings on campus. Development of unspoiled areas on, and surrounding, the campus should be undertaken only as a last resort, not as a matter of convenience. Intelligent building and innovative design can provide the setting for the continued flourishing of environmental education on the Middlebury College campus and act as a powerful magnet for the high caliber students, faculty, and staff who wish to be associated with an institution that reflects environmentalism rather than simply talks about it.

Recommendation 31: Middlebury College must incorporate energy efficiency and use of recycled building materials into all new construction. New construction allows for the incorporation of optimal design and technology from the first step; this will be translated into savings and improved quality of workspace for its inhabitants. As the field of energy saving and interior livability is evolving rapidly at present, many engineers and construction companies are unaware of the possibilities afforded by super-efficient glazing, passive solar design, alternative energy sources, etc. For this reason it may be necessary to employ architects and engineers who are informed about and experienced in the use of these technologies. Organizations such as the Rocky Mountain Institute, Center for Energy Research, Solarplexus and Ecotope Inc. are sources for information on materials and skilled practitioners.

Recommendation 32: Cutting edge technology should be incorporated into new construction to save money, energy, and resources and to act as an example to the community. When new construction takes place, every effort should be made to re-use, recycle or donate surplus building materials. If Middlebury College truly wants to set an example in its environmental awareness, it could make its built environment as educational as its faculty. A new science center should incorporate passive solar design, maximum efficiency glazing and walls, clean air filtration systems, natural lighting wherever possible, and energy saving heating, ventilation, and air conditioning systems. It could go a step further and deploy alternative energy generating capacity where solar water heating cells, photovoltaic panels, and wind generators minimize the building's energy costs and provide an example for the community at large. Construction of new housing, offices, and library facilities on campus, if following this trend, could reduce

their annual energy costs to almost zero. The Rocky Mountain Institute's headquarters in Snowmass, Colorado is a 10,000 sq. ft. office, research and visitor center that uses $5 of electricity per month (using 1982 technology). At a larger scale, the Audubon Society's headquarters in New York City has recently set the standard for large, energy-efficient building. College personnel (Vice President for Administration, Director of Operations, Director of Facilities Management) should visit the Audubon Society's Headquarters to see for themselves the possibilities for large building design which incorporates environmental principles.

Recommendation 33: If the student body is to expand, the college should encourage new arrivals to take a participatory approach to resource and energy savings. A new dorm could be run by the students as a working example of minimal impact. This building could be designed to demonstrate that expansion of the campus need not degrade the appearance or sustainability of the college campus and community.

Availability and dissemination of information

Recommendation 34. The President should establish and issue a policy statement affirming the College's expectation that new environmental technologies, opportunities, and procedures will be made part of the College's operations whenever possible. To that end, consideration and dissemination of information on new environmental technologies and procedures should be included among the responsibilities of the Director of Operations, the Environmental Coordinator, the Safety Officer, and the Environmental Council. Where greater expertise is needed, the College should consider hiring consultants who may advise on new environmental technologies and procedures as they affect the College's planning and operations.

Implications of an expanded student body

Immediate benefits. With respect to the impact of the College's operation, the only benefit of increasing the size of the student body is that if new dorm facilities need to be constructed, then the College has the opportunity to use the latest energy- and material-efficient designs.

Challenges. With more students comes more resource consumption, waste generation, and facilities construction, all of which have the potential to increase the impact of the College on the local environment.

Part 3: Environmental awareness and outreach

The Environmental Awareness Committee was asked two questions:

1. In what ways could the College increase the awareness of all members of the College community of the importance of improving efficiency and taking other measures intended to protect the environment?

2. In what ways could the College serve as a local and regional resource to increase environmental awareness outside of the institution itself?

The Committee believes that the best way to improve environmental awareness will be for the College to create and sustain excellent environmental programs, not to establish and carry forth any particular environmental message. The College's programs and activities should be a practical and academic model for environmental sustainability starting on campus and broadening in concentric circles of the College's influence. For instance, the College can most easily create environmentally sustainable programs on campus, but it should also gradually seek to provide leadership and services in the Middlebury community, Addison County, the State of Vermont, New England, the United States, and internationally.

The Committee recommends:

Recommendation 35: Adopt the recommendations of the Environmental Council. Aspects of the Council's work that relates directly to awareness are a) improving efficiency and reducing impacts on campus; b) improving stewardship of College-owned lands; and c) buying environmentally sustainable local foods and services.

Recommendation 36: Increase the College's involvement in ongoing community programs such as land use planning, environmental education, conservation practices, transportation, forestry and agriculture, natural area protection, and recreation. The College can offer technical assistance and resources to local and regional government agencies engaged in conservation activities, such as the regional planning commission and U.S. Forest Service. (Perhaps local conservation and planning agencies could be invited to conduct a yearly open house on campus, both to inform students, staff, and faculty and to encourage their involvement in their programs. Additionally the College should provide community leadership in local conservation issues without taking positions that will polarize the community.

Recommendation 37: Maintain model sustainable agriculture and forestry programs, and manage natural lands and waters in exemplary fashion, and support student work on model projects in the community. The College is creating a strong record--in the Cornwall Swamp, Otter Creek buffer, and Middlebury greenbelt trail--for managing and disposing of its own lands in ways that encourage environmental sustainability.

The College's agricultural and forest lands should be dedicated to sustainable agriculture and forestry programs, providing a learning center not just for Middlebury students but also for members of the community who are interested. Additionally the College should create partnerships with Vermont organizations (River Watch Network, The Nature Conservancy, The Vermont Land Trust) to manage its natural lands and waters according

to models that will be accessible to students and to the community. Efforts to increase awareness of these programs beyond regular users should include newsletter and alumni magazine coverage, open houses, and community communications. The College should also support student assistance on local projects such as trail-building, river monitoring, or cleanup. One such idea has been to initiate a new trail between the campus and the Green Mountain National Forest.

Recommendation 38: Create a regular program of outreach events, such as an annual environmental conference aimed at regional, national, or international audiences. The College should annually sponsor a conference on an environmental theme and aimed at a very broad regional, national, or even international audience. Obvious examples of past conferences are Spirit and Nature, The Future of the Northern Forests, A Sense of Place, and Forgotten Languages. The College should assure that funding is available not only to organize, support, and publicize excellent conferences, but also to record and publish the conference results. It would be valuable to bring in non-academic government and NGO representatives from the United States and internationally to increase knowledge of these events and to make them more practically applicable. We endorse the Environmental Council's suggestion that the College should seek to endow an annual lecture in environmental affairs.

Recommendation 39: Create outreach services, such as an annual environmental newsletter and on-line services available to students around the world. An annual environmental journal could include a) news and photos from Middlebury's annual environmental conference; b) contributions from Middlebury alumni active in the environmental field; and c) contributions from Middlebury's environmental studies faculty. On-line services would incorporate a bulletin board and information exchange for undergraduates interested in environmental issues, and might require hiring a couple of undergraduate students each semester to manage the on-line programs.

Recommendation 40: Work in partnership with other non-profit and educational organizations to publicize issues, conduct specialized seminars and conferences, and create publications aimed at environmental sustainability. Vermont has an extraordinary number of high-quality non-profit and academic institutions focused on the environment (e.g., Vermont Law School, Institute for Sustainable Communities, Center for Northern Studies). Middlebury could conduct special programs and seminars intended to improve awareness on specific topics. The College could also provide in-service training and awareness programs for the general needs of these important organizations, as needed.

Recommendation 41: Continue funding student organizations that increase student and off-campus awareness of environmental concerns, such as the Middlebury Mountain Club, Environmental Quality, Weybridge House, and Otter Creek Journal. Student organizations can be an effective way for the College to support creative environmental awareness initiatives; student organizations often channel enormous amounts of energy and ideas into excellent programs. We believe that the College should not only maintain funding for these organizations but should also propose increasing support through incentive-based funds that will allow student groups to expand membership and outreach on environmental issues.

Recommendation 42: Use scheduled orientations and student life staff to improve environmental awareness. The College should incorporate the environmental awareness message into first-year student orientation and should both train and assign JC's and RA's to carry out the College's environmental programs at the dorm level.

Middlebury College should begin to establish its awareness and outreach programs with support and participation from a variety of off-campus sources, such as foundation and non-profit executives, who will be able both to increase the quality of the programs and to spread knowledge of them throughout the United States and internationally.

Part 4: Where do we go from here?

Future work of the Steering Committee for the Program in Environmental Studies: Collect and analyze the data necessary to assess the quality of the Program and to implement internal change to the curriculum to address problem areas; evaluate the current program with regard to senior work; refine the mission statement of the Program to make the philosophy and purpose of the major more apparent; develop an ES minor; and further develop specific initiatives for spires within the ES Program.

Future work of the Environmental Council: The first priority for the Environmental Council is to follow through on the implementation of the recommendations in the 5 May 1995 report. Foremost among these are (a) establishing policies and procedures related to toxic waste on campus, and (b) establishing a framework for a regular environmental audit of the campus. The Council should also develop recommendations to be used in establishing priority items for the College's upcoming capital campaign. Overall, the future work of the Environmental Council ought to relate to its stated mission.

Ad hoc Committee for International/Environmental Studies programs: This committee should be comprised of faculty from the foreign languages, international studies, and environmental studies. The specific goal of this committee would be to explore the advisability of and logistics associated with the development of an international program that included an environmental studies and field science curriculum. This committee should also evaluate expanding the opportunities for students to take environmental studies and field science courses while enrolled in the Middlebury programs in Europe.

Ad hoc Committee on a U.S.-based branch campus: This committee should address three points:

1) The development of a Vermont-based summer program.

2) The advisability of a full-year program (both summer and academic year), one that includes an ES curriculum, somewhere in the U.S.

3) Clarify the relationship between the College and the Center for Northern Studies.

Ad hoc Committee on an environmental distribution requirement: This committee should further explore the value and implementation of a college-wide environmental studies distribution requirement.

Ad hoc Committee on environmental awareness and outreach: This committee should discuss the recommendations made in Part 3 of this report with the goal of developing a set of specific proposals for key environmental initiatives related to awareness and outreach.

Appendix 1. Considerations in locating a station for field courses in the environmental sciences:

Top priorities for the environmental sciences in the siting of a field station include:

1. A climate suitable for year-round field studies. This is particularly important for offering Winter Term courses. Some departments may have difficulty in accommodating an entire Fall or Spring semester away for a faculty member. A number of faculty members who wish to offer field courses could only leave Middlebury for a limited period such as Winter Term. Winter Term field courses would require much less adjustment in curriculum on the part of both students and faculty. Field courses in late Fall and early Spring Semester may also be hampered in an area with a cold climate. The warm climate of low-elevation areas in the southern U.S., however, is a problem for summer field courses.

2. A diverse biological and geological environment. Students in courses at the field station should be able to conduct studies in a variety of natural settings without the need for further travel to far distant locations. For biology and ecology, a wide range of climatic zones and associated plant and animal communities is a great advantage; these may be found in close proximity in areas with a large elevation range. For geology, an additional criterion is that rocks and sediments are well exposed for study; this is most commonly met in arid and semi-arid environments. An area with active modern geological processes (e.g., a high-relief, tectonically active mountain range) is also of great benefit. For hydrology and aquatic ecology, the proximity of streams and lakes is important.

3. Efficient and inexpensive logistical support. Field courses will obviously require transportation, meals, and lodging for participants. Transportation must be provided both to the field station, where reasonable proximity to a major airport will be of benefit, and to study sites in the vicinity of the field station. An ideal location would provide some opportunities for study and research within walking distance of the station, but such locations are limited, and vehicles will be necessary for travel to local and regional field areas. The cost of construction, maintenance, and general operating costs of a field station depend in part on the local economy, which should be considered in site selection.

Priorities for individual disciplines within the environmental sciences

Geology. Geology priorities point toward a site in the southwestern U.S. Although the climate of the southeastern U.S. supports year-round study, this region has very low geological diversity and very limited exposure of rocks and sediments. Although opportunities for field studies in environmental geology, hydrology, and many other subareas of geology are excellent in the Taos, New Mexico area, this site has a cold and snowy winter climate which would make local field work very difficult from December through February at minimum. The climate of central and southern New Mexico and Arizona and the Mojave Desert region of California are more suitable for winter studies.

Summer heat could be avoided and a greater range of environmental conditions would be available for study where high-elevation mountains lie in close proximity with desert basins. An excellent example of a field station of this type is the American Museum of Natural History facility in the Chiricahua Mountains near Portal, southeastern Arizona, located in part for the great biological diversity in this area. The southwestern U.S. also exhibits abundant examples of environmental problems related to mineral, energy, and water resources development and use, as well as soil and water problems associated with forestry and agriculture. These provide opportunities for productive student research in environmental geology and hydrology, and for application of these disciplines to practical field problems.

Biology. Biology priorities for siting revolve around year-round accessibility to diverse ecological communities. In these U.S., these needs would be best met in the Southeast, and to a lesser extent in the Southwest.

Physical Geography. The focus of research within the physical geography program at present is in circumpolar environments. Ideal field areas are the Northwest Territories of Canada or Alaska. A college field station, therefore, would probably not be sited in an environment suitable for these studies. However, a station close to an upland environment would provide opportunity for Alpine studies which have close ties to polar landscapes. In the US, the best setting would be the Rocky Mountain states of the west, particularly Colorado, Wyoming or Montana. Northern New Mexico could provide a base for study of the western uplands but travel would be extensive. The western montane environment provides a wonderful setting for landscape and environmental process studies because of the contrasts between it and the Middlebury setting familiar to our students.

Needs for field station classroom and laboratory facilities for the environmental sciences:

Because most geology and biology courses would focus on field exercises, the primary needs would be:

1. Vehicles (e.g. 15-passenger vans or suburbans) for transportation, and full camping and cooking equipment for trips to more distant sites. A variety of instruments would be used in field studies, including Brunton compasses, streamflow measuring gear, a portable seismograph and other geophysical gear, meteorological observation equipment, lake coring gear, one or two inflatable boats, and surveying instruments. Some of this equipment already exists at Middlebury and could be shared with the field station.

2. A combination classroom and "dry" laboratory space which could accommodate up to 30 persons, with large, moveable tables suitable for map and drafting work. Necessary equipment would include computers and printer; map and aerial photo

storage facilities; a few mirror stereoscopes; and ~5 petrographic microscopes, including one teaching microscope with projection facilities.

3. A smaller space is necessary for a wet sedimentary and rock laboratory, including a fume hood and sink, a small rock saw, an analytical balance and larger top-loading scales, a small oven, furnace, distilled water source, cold storage for soil and core samples, and sieves and shaker for particle size analysis. These facilities would be used by a few students and/or faculty at one time for research projects. Extensive lab counter space and hoods (i.e., for exercises involving entire classes) would not be required.

Appendix 2. A proposal for a Middlebury-in-the-Southwest site to serve the needs of the Bread Loaf School of English and the Program in Environmental Studies.

The Bread Loaf School of English has already led the way in establishing a program in the Southwest where, in addition to traditional literary studies, courses in indigenous native American culture and in nature writing have augmented a distinguished curriculum through an enlarged cultural and environmental awareness. Currently, The Bread Loaf School of English functions as a guest on the St. John's College campus in Santa Fe, which is not an ideal arrangement since the group of faculty and students cannot have the same social coherence and integrity that distinguishes the Bread Loaf campus in Vermont. Negotiations to purchase the Mabel Dodge Luhan estate in Taos, New Mexico broke down in the past, partially because the cost of purchase was not justified by Middlebury's use of the estate only in the summer.

We suggest that the Committee on the Environment include among its recommendations that the College once again examine the possibility of establishing a site in the Southwest that could serve during the summer as the home for the Bread Loaf School of English and during the academic year as the location of a program in Environmental Studies for students from both Middlebury and other institutions.

During the academic year, a program of environmental studies courses could be offered by faculty drawn from both Middlebury and other institutions. These courses would be designed to fulfill requirements of the Middlebury Environmental Studies major and could also be cognate courses for students majoring in other subjects. The courses could be organized according to two models: the first alternative would have one semester's work devoted primarily to science courses and the other semester's work devoted primarily to humanities courses; the second alternative would have an integrated and interdisciplinary set of courses organized around a designated environmental problem or issue. In the first model, students could choose to attend the Southwestern site for either one semester or the full year. In the second model, most students would attend for a single semester only. In either case, we would envision a program involving 60 to 80 students and 6 to 8 faculty members per semester, although the program might start off with smaller numbers in its first few years.

Intensive four-week sessions could be offered both in January, coinciding with Middlebury's Winter Term, and in June. A four-week program in June might be particularly attractive to students admitted to Middlebury in February, and to other students who wish to accelerate their date of graduation. The June session would precede the Bread Loaf School of English, which would occupy the site during July and the first part of August. Under this model, the Southwestern site would be fully utilized on a year-round basis.

Courses offered throughout the academic year would include explorations of the locale led by specialists and talks by and discussions with visiting naturalists, ornithologists, archeologists, geologists, and Native Americans. Participants in special literary or environmental studies courses would experience a unique blend of the practical and the theoretical, of discussion and field exploration. A Southwestern-based program,

emphasizing the field sciences, nature writing, and study of the indigenous culture, would be an important addition to Middlebury's diverse curriculum.

A projection of courses, including those with a field dimension, that would be attractive to offer at a Southwestern site should be included here, though it should be reiterated that other sites (such as The New School in Sarasota, Florida which is near a National Park) should be considered even if no ties with the Bread Loaf School of English were part of the arrangement. Planning for a Middlebury-in-the-Southwest program should also include discussions with other colleges that might be interested in providing faculty or student participants for a Middlebury program.

One possible location for a Middlebury Southwestern program could be the Mabel Dodge Luhan estate, located in Taos, New Mexico, near a great state park and bordered by the Taos Pueblo. This home for both an expanded program in environmental studies and the Bread Loaf School of English would take advantage of its magnificent locale and its proximity to the sacred landscape of our native peoples. In northern New Mexico's seven distinct climate zones, ranging from high desert country to subalpine mountain tops, participants would learn how to establish what Emerson called "an original relation with the universe."

Thoreau proclaimed that "In wilderness is the preservation of the world," and these words have taken on a particular urgency in our time of despoiled forests and polluted waters. Scientists, essayists, poets, and story-tellers, who see themselves reflected and enhanced by the places they cherish and inhabit, will continue to reanimate the tradition of honoring the wilderness by studying how it works as an ecosystem and by celebrating its immemorial effect on the human imagination as one of our deepest sources of metaphor, hoping to preserve a world that can continue to inspire the artistic imagination with the plenitude of its imagery.

The Mabel Dodge Luhan estate, as it presently exists, can accommodate comfortably about 40-45 students and about 6-10 faculty. There is already a foundation in place for a new building to be constructed. Detailed feasibility studies of this, or any other, site would of course have to be conducted before a recommendation regarding purchase and/or construction could be made. One of the elements of those studies would be the possibility for establishing science laboratory facilities on site.

A Middlebury campus in the Southwest could become a crucial meeting place for those who want to build on and sustain the great tradition of cherishing the earth and the ecosystems which enable life on this planet to survive. But, as we have emphasized, there may be other locations that are more suitable to the needs of an expanded environmental program -- an idea that we wish to affirm if Middlebury is to achieve the goal articulated by President McCardell that we become preeminent in our offerings in the environmental sciences and in the humanities that provide an enlarged vision of the role we believe our species should play in managing and valuing the resources of the natural world.

E. Davis

R. Pack
March 6, 1995

Appendix 3

TO: John McCardell
DATE: March 9,1995

COPY: Natural Sciences Planning Committee

FROM: Frank Winkler
Glenn Andres

SUBJECT: Need for Campus-Wide Analysis

According to the tentative schedule that has recently been announced, Middlebury stands on the threshold of what could be the most prolific decade for building in the College's history. Within the next year alone, we may be siting and breaking ground for a new Swimming Pool, Hockey Rink, and Social Houses, along with renovations of Old Chapel, the Johnson Art Studios, and Adirondack House. Numerous additional projects, including the long-awaited addition to the Science Center, are scheduled to begin not long afterward. And, should we decide to enlarge the student body significantly, even more extensive projects will occur within the coming decade. At the end of it, the Middlebury campus will be profoundly changed.

As we discussed with you Tuesday, we urge that before the College begins these major projects that we assess carefully the present state of the campus, and plan additions which will enhance it, rather than detract from it. Middlebury's campus is arguably its greatest long-term asset. In many areas we may have some distance to go to become the "College of Choice," but in the beauty of the campus, there are very, very few institutions that can compete with Middlebury. In our drive to pull ourselves upward in other areas, it's imperative that we not take excellence we already have too much for granted, lest we lose it.

We urge you to engage the services of a firm or individual who can help us understand what we now have, and articulate principles to follow as we plan for future growth. What are vistas that should be preserved? How do buildings relate to one another and to the campus as a whole? What are pedestrian and vehicular traffic patterns now, and how might changes affect them? What are architectural themes that can be repeated? What we need is an *analysis*, not a "grand design" or "master plan". An analysis will serve as a guide for any future development. It is perhaps best carried out by a firm or individual who is *not* designing any buildings now being planned, because they will be less likely to slant the analysis to justify any one particular concept for growth.

Middlebury is fortunate to have great faculty expertise in Geographic Information Systems (GIS) and state-of-the-art equipment for geographic analyses and can easily add Computer Assisted Design capability. It is reasonable that our faculty and students could

play a role in gathering and entering data that could become a part of the analysis, and the resulting product could include maps and data on our own computers which could be used to aid in testing the impact of possible changes or additions to the campus, and for visualizing how they might look from any vantage point.

There are several firms with which we already have some connection who could work with us on a campus analysis:

- Dober Lidsky, Craig and Associates – Belmont MA. Art Lidsky is very much a known quantity, having worked effectively with us in developing plans for Science Facilities. He and his firm are one of the nation's premier campus planners. They have done analyses and long-term planning for Carleton, Bowdoin, and numerous other institutions.

- Juster, Pope, Frazier – Shelburne Falls, MA. This firm has recently completed a campus planning study for Amherst College. A brief summary of the study, included in materials they have submitted with their qualifications as candidate architects for the Science Facilities project, suggests real sensitivity to that campus and its surroundings. An initial read of the dossiers we have suggests that this firm is unlikely to be among the finalists for the Science project, but they might be an excellent candidate for the analysis we are suggesting here. One of the partners, Earl Pope, turns out to be the father of Dan Pope, '97.

- Parker Croft, David Bartlett, and Associates – Middlebury and San Francisco. They have done extensive work for the University of California system and are currently campus architects to Stanford and Notre Dame. Bartlett began his career as a preservation expert. Croft has shown great sensitivity and ingenuity in working with historical fabrics and settings.

- Wallace, Floyd and Associates – Boston. This is the firm that planned the development of Charles Center, which triggered the rebirth of downtown Baltimore. They are now doing the Central Artery project in Boston and have done master plans for the northern extension of the MIT campus. David Wallace is an alumnus ('50) with great sensitivity to both Middlebury's campus and town. He was responsible for the recent design studies for Middlebury's second in-town bridge that broke an impasse between state preservation and traffic planners.

Again, what we seek is to understand and plan for intelligent growth that will preserve the integrity of the Middlebury campus and enhance what is already one of the premier college campuses in America.